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(54) Stacking/nesting tray

(57) A stacking/nesting tray of the kind having bars 16 extending across the tray to support the weight of the next stacked tray thereabove, and which can be moved to lie along the end walls 12 in the nested condition, has slots 32 into which end portions 18 of the bars can be lifted and dropped for nesting, and channels in the side walls to receive the end portions 18 of the bars 16 when in the stacking position. Portions 20 of the bars 16 remain in the slots 32 in the stacking condition for retention.

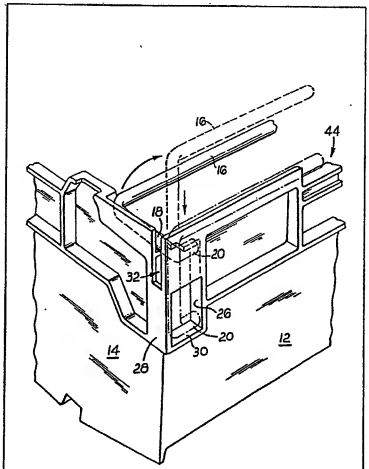

Fig. 1

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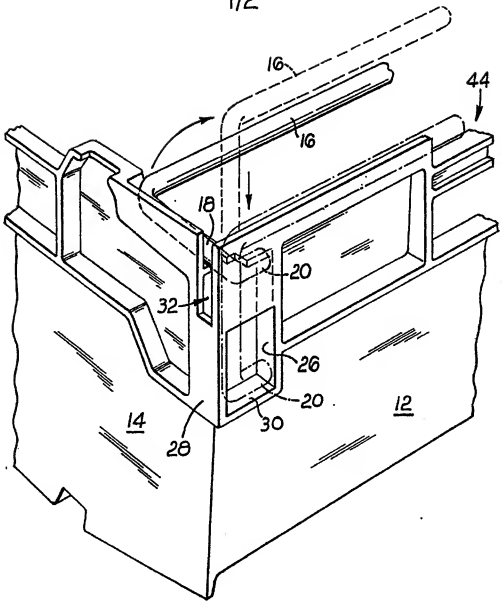

Fig. 1

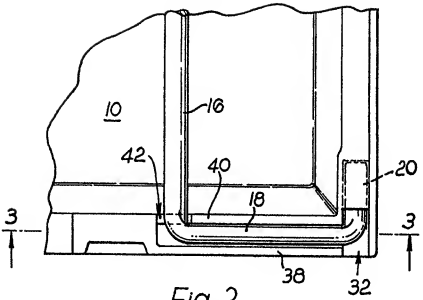

Fig. 2

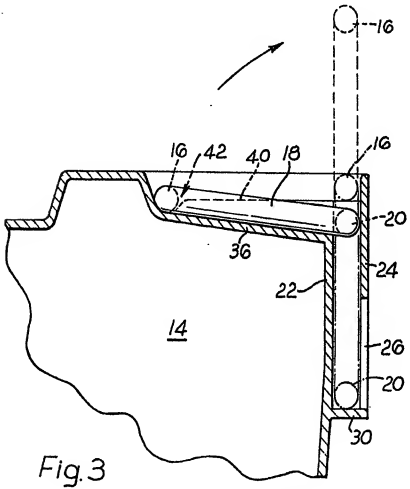

Fig. 3

SPECIFICATION
Stacking/nesting tray

This invention relates to stacking/nesting trays of the kind used for storage and transport of goods. The trays are of approximately rectangular plan shape, with side and end walls diverging from the base. In the nested condition e portion of each tray (except the bottom one in a stack) is received in the tray therebelow, so as to minimise the space requirement when the trays are empty. In the stacked condition, the base of each tray is supported at ebout the level of the top of the trey therebelow.

One system for the stacking/nesting uses a bar at each end of each tray, which is pivoted to the trey so that it can be swung between a stacking position in which it is parallel with the end wall but overlies the base, and a nesting position in which it lies outside the end wall and closely edjecent thereto.

The object of the present invention is to provide an improved nesting/stacking tray.

In accordance with the invention a nesting/stacking tray has at least one stacking bar and is characterised in that generally co-axial extreme end portions of the bar which are generally parallel to the stack supporting portion of the same, are located in generally vertically extending slots, and when said co-axial portions are towards the top of the slots, the stack supporting part mey overlie the bese of the tray, and when displaced towards the bottom of the slots permit tray nesting.

One presently preferred embodiment of the invention is now more particularly described wherein:

Figure 1 is a fragmentary perspective view of a corner of a tray;

Figure 2 is a fragmentary plan view of the corner; and

Figure 3 is a fragmentary sectional elevation on the line 3—3 of Figure 2.

Referring now to the drawings, it will be seen that the tray hes a base 10 unitary with en end wall 12 and a side wall 14. The stacking bar comprises a mein rod portion 16 which extends parallel to the end well, and both ends of the portion 16 are unitary with transversely extending portions 18 end with return portions 20 which thus lie parallel to the main portions 18.

A slot or recess is provided at each corner bounded between parallel walls 22, 24, which may, as illustrated, be apertured at 26 for convenience in manufacturing the tray as an injection moulding of thermo-plastic material, for purposes such as core withdrawal or the like. The slot or recess is further bounded by perallel walls 26, 28 (Figure 1) at right angles to the walls 22, 24. The recess is closed at the base 30, and part closed at the top. The wall 28 is slotted at 32 at its upper portion for the purpose of assembly of the stacking bar to the tray. This is accompilshed by locating the bar in the broken line position of Figure 1, but with one of the return portions 18 bent at only an obtuse angle to the portion 16, so that one of the end portions 20 can be inserted in the corresponding slot 32 and seated against the recess wall 26, and then the second and opposite end portion 20 can be eligned with its slot 32 and entered into position by completing the shaping of the stacking bar.

It will be seen from Figure 3 that the inner wall 22 of the recess is cut eway at the upper portion so that it terminates flush with (and is integral to) a support surface 36 provided towards the top of the side wall. Hence, in the bar position shown in full line, the portion 18 lies on the support wall 36. It will also be seen from Figure 2, that the portion 18 lies between a pair of flanges 38, 40 extending along the side wall, and the latter (40) is cut away at 42, as best seen in Figure 3 to receive the main portion 16 of the stacking ber.

The cut-eway 42 and the surface 36 effectively maintain the bar in the full line position shown in the drawings. This is the stacking position. To prepare the trey for nesting, the bar is swung as indicated by the arrow A in Figure 3 to the broken line position shown in the Figures, and it can be lowered in the slots to the chain-dot line position shown in the Figures.

Desirably the end wall of the tray is cut away for example as at 44 to enable the centre portion of the rod to be grasped enabling it to be lifted to the broken line position when it is to be swung back to the stacking position.

In the embodiment illustrated it will be noted that in the stacking position the bar extends slightly below the highest point on the side walls, so that the side walls of the illustrated tray will serve to confine the lowermost portion of the next superposed tray to provide steck security. Further, it will be noted that in the stecking position, the bar effectively reinforces the corner of the illustrated tray and thus resists distorting forces due to an improperly assembled stack or the like. This is e particular advantage over the known arrangements where an equivelent to the portion 20 is journalled in a plain bearing hole in the side wall, and in which the corner of the tray is relatively unsupported.

A high stack of heavily ladden trays can be of substantial weight. In the prior art, the load on the lowermost tray wes taken at almost point contact of the ends of the bar and similarly on the journal holes hingeing the bar. With the arrengement according to the invention, the weight is distributed et least over the length of the portions 18.

If desired, the bar can be made of circular cross-section rod which is locally flattened, for example to an elliptical shape et 18 where illustrated, so as to minimise the required width of tray wall, and the end portions 20 may also be similarly flattened or even reduced, since the portions 20 are only required for the purposes of keeping the bar assembled captive to the tray and are not in themselves load bearing.

CLAIMS

1. A nesting/stacking tray has at least one stacking bar which, in the nesting condition, lies along an end wall of tray, and in the stacking condition extends parallel to the side wall across the top of the tray to support the base of the next tray thereabove, in which the bar has portions near each end extending transversely of the tray supporting length of the bar, and end portions which are co-axial with one another and extend towards one another, the tray having slots which extend vertically (in normal use) and which receive said and and near end portions in the nesting condition, and contain only said end portions in the stacking condition, which said transversely extending near end portions lie along the top of the side walls of the tray.

2. A tray as claimed in Claim 1 wherein said vertically extending slots open to apertures in the end wall of the tray.

3. A tray as claimed in Claim 1 or Claim 2 wherein said vertically extending slots open to apertures in the side walls of the tray.

4. A tray as claimed in any of Claims 1 to 3 wherein the end wall of the tray is cut away centrally at the top to enable the centre portion of the bar to be manually grasped and displaced.

5. A tray as claimed in any preceding claim wherein the side walls of the tray are of channel section to receive said transversely extending portions in the stacking position.

6. A tray as claimed in any preceding claim wherein the rod is of circular cross-section.

7. A tray as claimed in any preceding claim wherein the rod is of circular cross-section except for said transversely extending portions which are of elliptical cross-section.

8. A tray substantially as described with reference to the accompanying drawings.

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